INSTRUCTIONS FOR USING STANDARD SOUND WALL - RIBBED STEEL PANELS DETAIL SHEETS

Attached are instructions for using the following sheets:

"Sound Wall – Ribbed Steel Panels – Details No. 1"	(File XS-3-87.0)
"Sound Wall – Ribbed Steel Panels – Details No. 2"	(File XS-3-87.1)
"Sound Wall – Ribbed Steel Panels – Details No. 3"	(File XS-3-87.2)
"Sound Wall – Ribbed Steel Panels – Details No. 4"	(File XS-3-87.3)

The detail sheets are shown on pages 20-38, 20-38.1, 20-38.2, and 20-38.3 of the *Bridge Design Details* manual.

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Attachment(s)

Supersedes Memo to Designers 22-35 dated April 1986

INSTRUCTIONS FOR USING STANDARD SOUND WALL DETAIL SHEETS RIBBED STEEL PANELS

These instructions are for use with the standard sound wall details sheets: Sound Wall – Ribbed Steel Panels.

Since changes are made on the standard details from time to time, it is important to always order new copies from the original tracings. Making copies from a film already on hand has resulted in project plans going to contract with outdated details. Duplicate vellums of the original standard details for use by Office of Structure Design and District Project Development may be ordered from the Floor Clerks, telephone 916-324-0553 (ATSS 8-454-0553) or telephone 916-327-2004 (ATSS 8-467-2004). Duplicate reproducibles for use by private consultants can be obtained from the Technical Publications Section, telephone 916-324-7439 (ATSS 8-454-7439). There is a charge to the consultants unless the request is made for them through the Externally Financed Branch for jobs being constructed on the State Highway System.

Using the sound wall detail sheets is similar to using the retaining wall detail sheets shown in the book of Standard Plans. The detail sheets show only the structural details of the wall. The plan views, elevation views, and architectural requirements, if any, must be shown on other sheets.

These details *are not* to be used for retaining earth and *are not* to be used at locations 15 feet or less from the edge of pavement unless protected from traffic by an intervening concrete safety-shaped barrier. Also, the details from these standard sheets are not to be used on bridges or retaining walls or at locations where the design wind pressure is greater than 15 pounds per square foot. Local building officials can normally provide information on wind loads. The 15 pounds per square foot wind pressure shown in the design notes is based on a wind velocity of approximately 55 miles per hour.

Since these standards are designed to span horizontally between the posts, access openings through the walls require additional posts on each side of the opening. To eliminate the need for a special access opening design, it is suggested that the wall be overlapped to provide access between adjacent panels. The length of longitudinal overlap should be three times the lateral distance between wall panels.

When using these standard sound wall details, it is necessary to verify that the wall heights, ground conditions and soil properties for each wall site agree with the design parameters shown.

When showing the elevation views of the wall, indicate the bottom of wall elevations and the wall heights ("H") with their limits. For walls located on sloping ground where the bottom of wall is parallel to the slope, show top of pile or top of concrete backfill elevations at the center line of posts and show top of panel elevations, top of panel slopes or wall heights. In addition to the elevations, it is suggested that the design wall height of those posts that are located in sloping ground also be shown in order to assure that the correct tabular post data will be used. The bottom of wall should be set to provide a minimum of 6" embedment below the finished ground line. After establishing the embedment, verify that the resulting exposed wall height above the ground line meets the required heights for sound attenuation.

For *Ground Line 1* where the finished ground is level on both sides of the sound wall, the detail sheets show foundation designs for two allowable ultimate lateral soil pressures. The proper one to be used will be recommended by the Engineering Geology and Technical Services Branch of the Transportation Laboratory. To make the soil pressure and soil property determination, the Geology Branch requires a preliminary wall plan, a site plan, an index map and any other pertinent information that applies. The criteria for level ground on both sides of the wall are shown on Figure 1. The finished ground condition *must be determined* during the design phase. *Add* a note to the plans that indicates whether the post data is to be taken from the tabular values of Ground Line 1 or Ground Line 2. Should the condition for level ground on both sides of the wall apply, add the allowable ultimate soil pressure value recommended by the Geology Branch to Note S of the General Notes. The "Log of Test Borings" sheet accompanying the foundation report must be included with the contract plans.

Special architectural requirements, if any, must be indicated on the plans. All sound walls that are designed in the District without architectural review, either in-house or from other sources, are to be submitted to the Office of Structure Design for such a review prior to finalizing plans.

Several types of wall finish will be permitted for the ribbed steel walls. The panels, posts, flashings and miscellaneous components may be fabricated of uncoated self-oxidizing steel, may be galvanized, may be galvanized and painted, or may be treated with a protective color coating over galvanizing. Where appropriate, the Contractor may be given the option of either the painted or protective color coating finishes. The finish or finishes to be used shall be determined during the design stage and noted on the plans.

Metal panels are available in a variety of colors and in several different coatings that were developed for both corrosion protection and for ease of cleaning. The coated panels should be extremely useful in areas where graffiti is a problem. In selecting colors, choose from those that are commercially available from the panel manufacturers. The self-oxidizing steel should not be used where rust staining would generate corrosion or appearance problems. Note B of the General Notes will require an asphalt coating on self-oxidizing steel that is in contact with soil.

The details show several optional architectural features that may be used individually or in combination. The end panels of the wall may have sloped, stepped or level tops depending upon the placement of the panels. Caps and flashings may be used with either Type A or Type B wall layout and with either vertical or horizontal panels. The type of end panel to be used and the need for the panel cap, post cap, post flashing or girt flashing must be determined during the design phase. The optional features that are to be used, if any, must be shown or noted clearly in the plans.

The Aesthetics and Models Section, telephone 916-445-2138 (ATSS 8-485-2138), can provide assistance in determining architectural requirements. Standard Aesthetic Features sheets are not available for this wall type.

The 1½" to 3" variable panel depth shown on the detail sheets was selected to allow a wide selection from the commercially available panels and to satisfy the structural design criteria. The panel

information (minimum section modulus, minimum moment of inertia, and pattern repetition) shown on the detail sheets corresponds to a minimum nominal thickness for uncoated sheets of 0.036" for "d" = 1½" and 0.030" for "d" = 3". Each sound wall site requires an acoustical analysis to determine the proper panel thickness needed to provide the desired attenuation.

When uncoated, self-oxidizing sheet steel panels are used, the thicknesses given above shall be shown in the blanks provided in Note G of the General Notes unless a greater minimum nominal thickness of such panels are required, the thicknesses to be shown in Note G shall be selected from the "Uncoated" column of the table below.

When plain galvanized sheet steel panels, painted galvanized panels, or galvanized panels treated with a protective color coating are to be used, the minimum nominal thicknesses to be shown in Note G shall be the thicknesses in the "Galvanized" column which correspond to the thickness determined for uncoated panels.

Sheet Steel Gage	**Minimum Nominal Sheet Steel Thickness**	
(For Information Only)	Uncoated	Galvanized
14	0.075"	0.079"
16	0.060"	0.064"
18	0.048"	0.052"
20	0.036"	0.040"
22	0.030"	0.034"

The pay items for the steel panel wall system will be as follows:

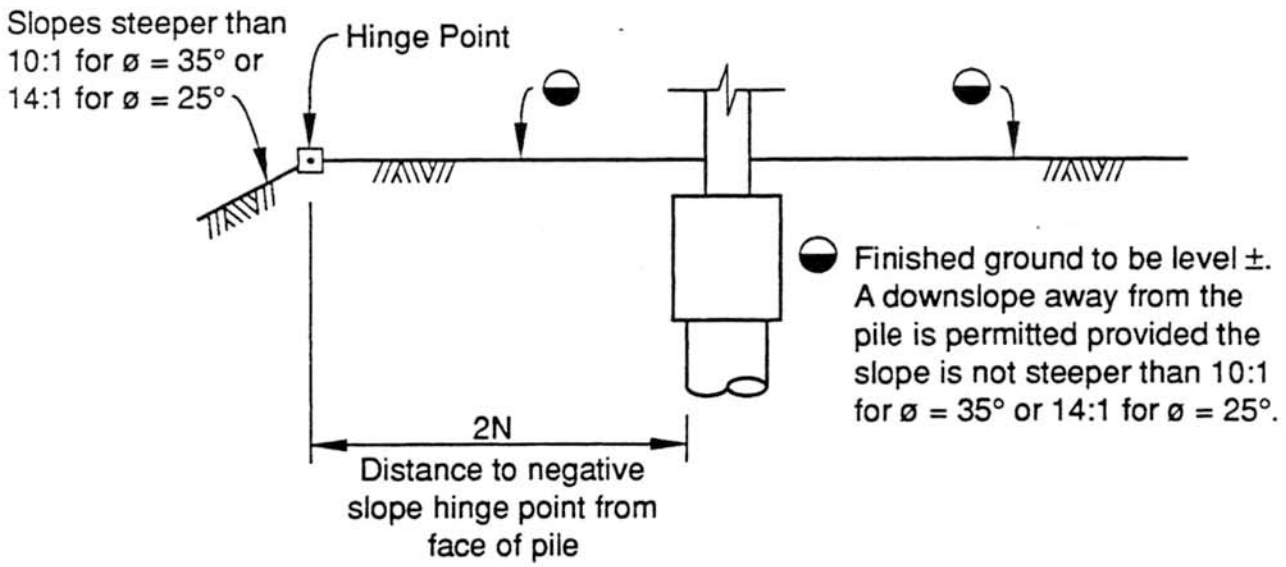
Sound Wall - Ribbed Steel Panel	SQ FT

The total area of Sound Wall will be measured using the vertical limits between the top and bottom of wall and the horizontal length of the wall with no deduction for the posts. The length of Post Embedment (per post) is shown in tabular form on the standards.

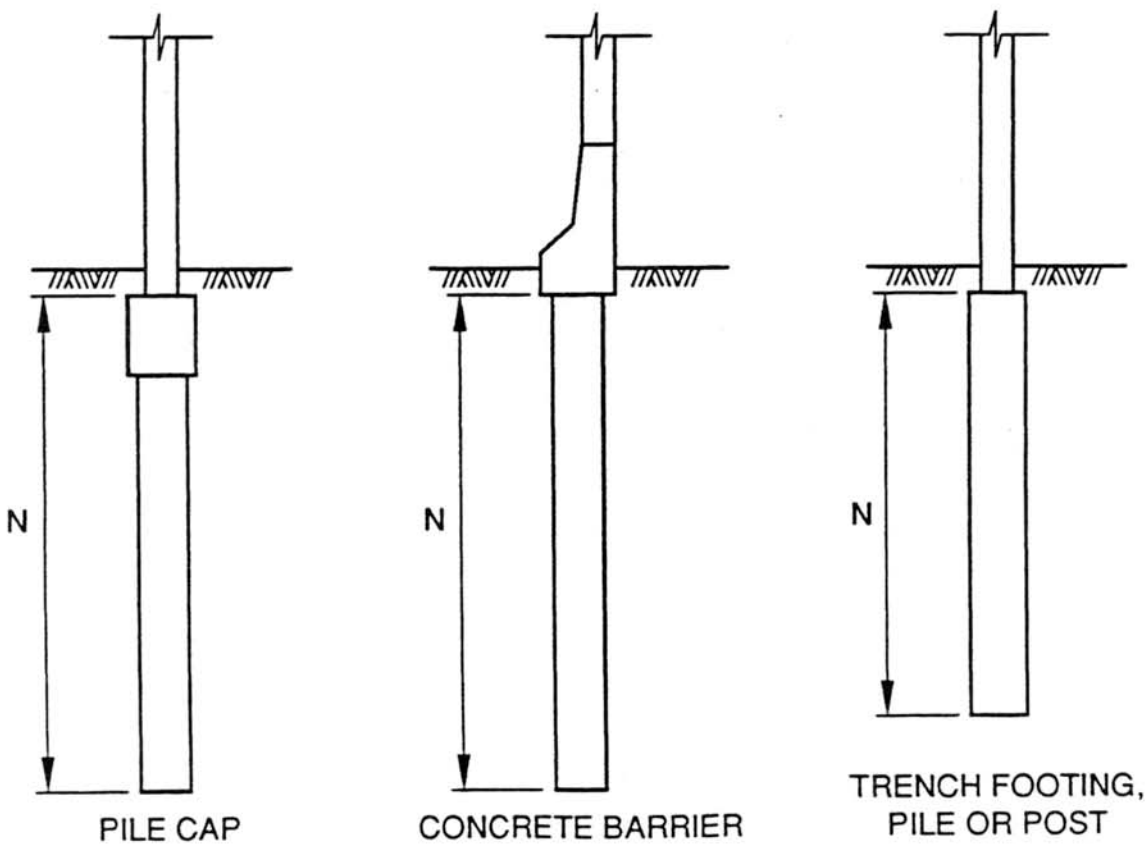
Construction Considerations

To facilitate building this sound wall, a minimum of 2' wide access is required on both sides of the sound wall. Also, the existence of overhead or underground utilities may limit the use of construction equipment as specified by OSHA. Review by Construction may assist in preparing the final plans.

Questions regarding the use of the standard sheets or the instructions should be directed to the Walls and Railings staff specialist, telephone 916-445-9196 (ATSS 8-485-9196).



Note: If the location of the slope hinge point is less than 2N, the level ground ground condition *cannot* be used.



CRITERIA FOR LEVEL GROUND

Figure 1